

ACTION PLAN



There are opportunities to help outline approaches, partners, and programs to assist citizens and agency personnel in conserving the aquatic resources of the Meramec River watershed. In addition, discussion and recommendations pertaining to watershed conditions, can be found in the Geographic Information Systems (GIS) Analyses section of this report, and a list of potential partners is contained in the Related Information link.

GOAL I: MAINTAIN AND IMPROVE WATER QUALITY IN THE MERAMEC RIVER BASIN SO ALL STREAMS ARE CAPABLE OF SUPPORTING HEALTHY NATIVE AQUATIC COMMUNITIES.

Status: Overall, water quality within the Meramec River basin is quite good. In fact, the Missouri Department of Natural Resources Clean Water Commission designated segments of Courtois Creek, Huzzah Creek, Blue Springs Creek, and the Meramec River as Outstanding State Resource Waters. Despite the basin's overall good water quality, problems do exist. In the upper and middle basin, cattle grazing on creek bottom pastures is very common. When cattle have open access to streams, damage to riparian areas and excessive nutrient loading of the streams often results. In the upper basin, impoundments containing tailings from mining operations pose a potential threat to stream water quality. The lower watershed from Eureka to Fenton is an urbanized zone that poses other threats to water quality. Sediment and pollution laden runoff enter the lower Meramec system rapidly because of impervious surfaces from development and the channelization of tributaries.

Objective 1.1: Streams within the basin will meet state standards for water quality.

Strategy: Enforcement of existing water quality regulations and necessary revisions to these regulations will help reduce violations. Water quality problems must also be addressed through public awareness efforts and by encouraging good land use in riparian areas and throughout watersheds in the basin. The citizen activism present in the basin through STREAM TEAMS and a variety of related organizations should be encouraged. Working with related agencies to promote public awareness and incentive programs, cooperating with citizen groups involved with water quality issues in the basin, and helping to enforce water quality laws will be among the most efficient ways to achieve this objective.

Enhance people's awareness of 1) water quality problems affecting aquatic biota, 2) viable solutions to these problems, and 3) their role in implementing these solutions. Media contacts, personal contacts, special events, and literature development and distribution will be used to reach people throughout the basin.

Review Section 404, Non-point Discharge Elimination System (NPDES), and other permits and either recommend denial or appropriate mitigation for

those which are harmful to aquatic resources. Related activities will include cooperating with other state and federal agencies to investigate pollution events and fish kills, assisting with the enforcement of existing water quality, mining, landfill, and dam safety laws, and recommending appropriate measures to protect and enhance aquatic communities.

Missouri Department of Conservation (MDC), the Missouri Department of Health, and the Missouri Department of Natural Resources (MDNR), should work together to reduce contaminant levels in fish by collecting fish for contaminant analysis, advising the fishing public on the impacts of contaminant levels, and identifying and eliminating sources of contamination.

MDC, MDNR, and the Missouri Department of Health should work together to monitor water quality, improve water quality, and ensure compliance with discharge permits.

Trained volunteer groups, such as STREAM TEAMS, can assist with water quality monitoring and improvement. Volunteers are presently monitoring water quality at over 30 locations in the Meramec River basin. Recruit volunteers to monitor Blue Springs Creek and Brazil Creek.

Related monitoring efforts such as a possible Fisheries Division biomonitoring program and/or participation in the Missouri Aquatic Resource Assessment Project should also be encouraged and directed to strategic locations such as the lower Meramec where mussel populations are declining, Dry Fork and Blue Springs Creek which appear to be becoming more enriched from nutrient input, and Courtois Creek below the mine at Viburnum.

Besides involvement in water quality monitoring and trash pick-up efforts such as the highly successful Operation Clean Stream, STREAM TEAMS have an advocacy role to play in regulatory and enforcement matters pertaining to water quality. Examples include the need for supporting funding initiatives related to municipal sewage treatment plant upgrades and supporting the drafting and passage of comprehensive

state water law, including provisions related to in-stream sand and gravel mining.

GOAL II. IMPROVE RIPARIAN AND AQUATIC HABITAT CONDITIONS IN THE MERAMEC RIVER BASIN TO MEET THE NEEDS OF NATIVE AQUATIC SPECIES.

Status: Stream habitat quality is fair to good throughout most of the basin. Some areas, including portions of the Brazil Creek subwatershed, Courtois Creek, Huzzah Creek, and Indian Creek watersheds, suffer from a more severe lack of riparian vegetation. In these and other streams the lack of adequate riparian corridors, excessive nutrient loading, streambank erosion, excessive runoff and erosion, and the effects of extensive instream gravel mining are among the problems observed. Grazing practices along many streams contribute to streambank instability, nutrient loading, and poor riparian corridor conditions. Increased land clearing and higher runoff associated with urbanization also impact stream habitat quality.

Objective 2.1: Riparian landowners on third-order and larger streams will understand the importance of good stream stewardship and where to obtain technical assistance for sound stream habitat improvement and good watershed management.

Strategy: Advertising and promoting stream programs, installing and maintaining demonstration projects, and providing educational opportunities to landowners will make them more aware of the reasons and techniques for protecting streams. Emphasizing economic advantages of stream improvements will encourage more landowners to participate.

Work with MDC's Outreach and Education Division to develop stream management related materials and present related courses for elementary and secondary school teachers so that the next generation of landowners will understand the importance of good stream stewardship.

Establish and maintain stream management demonstration sites. Initially, existing sites on the upper Meramec and Indian Creek will be used for demonstration purposes. Thereafter, additional sites will be developed as part of an anticipated Special Area Land Treatment (SALT) Project in the Dry Fork watershed. Other sites will be located to provide demonstration opportunities to landowners throughout the basin.

Promote good stream stewardship through landowner workshops and stream demonstration site tours.

Objective 2.2: Maintain, expand, and restore riparian corridors, enhance watershed management, improve instream habitat, and reduce streambank erosion throughout the basin.

Strategy: Along with good water quality, high quality aquatic habitat is the critical factor in maintaining and improving natural stream communities. Stream habitat conditions will be improved by cooperating

with and providing technical assistance to private landowners, working with other local, state, and federal agencies to manage stream frontages on their properties, and installing stream improvement and habitat enhancement projects on public lands within the basin. Monitoring habitat conditions and using regulatory avenues to reduce impacts from development projects should also help to identify problems and minimize impacts on the stream resource.

Monitor habitat conditions in the basin periodically by using satellite imagery, aerial photography, and on-site inspections. Update as needed the GIS data sets that are part of this project report.

Ensure that all public areas are examples of good stream and watershed management by including appropriate recommendations and prescriptions in area plans, implementing these practices in a timely manner, and monitoring these practices throughout their life. These practices will include, but may not be limited to, riparian corridor re-establishment, riparian corridor management, and maintaining soil erosion levels at "T" (soil replacement level) or lower.

Provide technical recommendations to all landowners that request assistance and who are willing to reestablish and maintain an adequate riparian corridor.

Work with the Natural Resources Conservation Service (NRCS) and the Soil and Water Conservation District (SWCD) boards to help them address watershed management concerns with their programs.

Improve riparian corridor and watershed conditions by actively participating in SALT projects to incorporate fish and wildlife values and promote sound stream stewardship. Cooperate with NRCS and SWCD boards to establish a SALT Project in the Dry Fork subwatershed and in additional subwatersheds suggested in the GIS Analysis Section of this report.

Assist landowners with improving stewardship of streams by promoting cost share programs, including MDC's Cost Share Program, that include streambank stabilization, alternative watering provisions, and establishment and maintenance of quality riparian corridors in target areas. Material presented in this report is useful in considering potential target areas.

Encourage agencies, municipalities, county

governments, and citizen groups such as the Meramec River Recreation Association, Operation Clean Stream, and STREAM TEAMS to work together in establishing and maintaining riparian greenways. Creating a comprehensive Meramec River greenway plan to be shared by adjoining stakeholders would aid the process. Important wetlands identified in the GIS Analyses section of this report should be considered in future additions to existing greenways.

Assist with monitoring compliance with provisions of the Meramec Park Lake deauthorization (Public Law 97-128). Besides deauthorization of the reservoir, the state of Missouri was deeded a perpetual 600-ft. easement on privately-owned land bordering the Meramec River, Huzzah Creek, and Courtois Creek within the project area. This easement is intended to provide a natural corridor in which construction of new buildings, tree cutting, and trash deposition are prohibited.

Assist the US Army Corps of Engineers in their Section 404 regulatory activities, especially those pertaining to gravel mining and bridge replacements. Assistance shall be in the form of reporting unauthorized activity as well as participating in pre-application meetings and commenting as requested on 404 permit applications. Utilize contacts with landowners, contractors, developers, and municipal and county officials as opportunities to educate people about how to obtain gravel and control construction site erosion in ways that minimize damage to stream systems.

Objective 2.3: Protect and restore the limited wetland habitat within the Meramec River watershed, particularly Palustrine wetlands that function as fish nursery areas and areas containing significant clusters of Palustrine wetlands.

Strategy: Nearly all of the goals, objectives, and strategies in this Action Plan contribute to the conservation of Riverine wetlands. A more directed effort will be needed to address conserving important and scarce Palustrine wetlands.

Provide wetland location information contained within the GIS Analysis Section of this report to the entities involved in establishing greenways along the Meramec River and tributaries, so future greenway additions may possibly include these wetlands.

Provide wetland location information contained within the GIS Analysis Section of this report to entities responsible for the ownership and management of public lands to help ensure that special Palustrine wetlands already in public ownership are properly managed to protect and restore their unique characteristics. In addition, knowledge of special wetlands in an area may aid their acquisition if opportunities for purchase occur.

Where special Palustrine wetlands occur on private land, landowners should be made aware of the uniqueness of the resource in their possession. This could be accomplished by direct personal contact from agency personnel, agricultural agency field days, or other means such as mailing information.

Some landowners may have the desire to participate in private land incentive programs which help fund management techniques that benefit wetlands. There are a variety of programs available, and landowner services personnel with MDC, NRCS, and SWCD can assist in matching the right program with a particular landowner's resource and land management goals. Some examples of pertinent incentives include the Wetland Reserve Program, the Conservation Reserve Program, and cost shares for setting up planned grazing systems.

GOAL III: MAINTAIN DIVERSE AND ABUNDANT POPULATIONS OF NATIVE AQUATIC ORGANISMS WHILE ACCOMMODATING ANGLER DEMANDS FOR QUALITY FISHING.

Status: The basin has a very diverse fish assemblage of 125 fish species collected since 1930. The crystal darter, a state-listed species, is present in the lower Meramec Basin. Excellent sportfishing is available on the Meramec and its tributaries, and basin streams are widely acclaimed, particularly for smallmouth bass and rock bass. Sportfishing management emphasis species are smallmouth bass, largemouth bass, rock bass, brown trout, and rainbow trout. Crawford County contains the Meramec River Special Trout Management Area (from Scott's Ford Access to Bird's Nest Access), the Meramec River Smallmouth Bass Special Management Area (from Highway 8 to Scott's Ford Access), and the Blue Springs Creek Wild Trout Management Area. The heavily fished Meramec Spring Trout Park lies immediately adjacent to the Meramec in Phelps County. Floating and float-fishing are highly popular within the basin, particularly on the upper Meramec River, Huzzah, and Courtois Creeks. The taking of non-gamefish (mainly sucker species) by gigging is a strong tradition throughout the basin.

Meramec mussel populations have been surveyed periodically. Relative abundances are declining, and habitat disturbances are the suspected cause. Fortunately, the endangered pink mucket (federal listing) is still maintaining a presence in the lower Meramec.

The Meramec River basin contains eight species of crayfish and many aquatic insect groups, including pollution intolerant species that require clear, well-oxygenated, unpolluted streams. Unusual macroinvertebrates found in the Meramec Spring system include the cave crayfish (*Cambarus hubrichti*) and a caddisfly, *Glyphopsyche missouri* Ross. The cave crayfish inhabits the subterranean spring system while *Glyphopsyche missouri* is found in the spring branch. Meramec Spring is the only known location of *Glyphopsyche missouri* in the world.

Objective 3.1: Evaluate, maintain, and where feasible, improve sportfish populations, with primary emphasis on smallmouth bass, largemouth bass, brown trout, rainbow trout, and rock bass.

Strategy: Assess the quality of populations of sportfishing management emphasis species and take steps to maintain or improve their populations through public education, regulations, habitat improvement, stocking, and other methods.

Finish the evaluation of the regulations on the Meramec River Smallmouth Bass Special Management Area and conduct periodic sampling to monitor any changes in the smallmouth bass population over time.

Conduct black bass and rock bass population sampling on the Meramec River in Franklin County to help determine the feasibility of establishing special management area fishing regulations there.

Stay updated on the status of sportfish populations in the Meramec and its more heavily-fished tributaries through periodic sampling.

Complete and report on the assessment of the Meramec River Trout Special Management Area currently in progress. Adjust the brown trout stocking regime and regulations if appropriate. Work with the public to increase understanding and compliance with area regulations.

Proceed with experimental instream habitat improvement projects at Blue Springs Creek.

Objective 3.2: Maintain populations of native non-game fishes and aquatic invertebrates at or above present levels throughout the basin.

Strategy: Assess the status of fish and invertebrate communities through systematic, periodic sampling. Techniques to maintain or improve non-game fish or invertebrate communities will depend on the community in decline and the causes of the decline.

Develop standard sampling techniques for assessing fish and invertebrate communities, including the use of indicator species, and implement a monitoring

program to track trends in species diversity and abundance.

Maintain aquatic biodiversity and protect or enhance fish and invertebrate species diversity and abundance using water quality improvement, habitat improvement, regulations, stocking, and related techniques.

Encourage the formation of a SALT Project for the Dry Fork watershed. The Dry Fork is the major recharge area for Maramec Spring. Maramec Spring is a vital water source for the Meramec River, and the spring branch itself contains very unique fauna.

GOAL IV. IMPROVE THE PUBLIC’S APPRECIATION FOR STREAM RESOURCES AND PROVIDE FOR RECREATIONAL USE OF STREAMS IN THE MERAMEC RIVER BASIN.

Status: Streams in the basin are used extensively for fishing, floating, motor boating, and other recreational activities. The upper Meramec, Huzzah, and Courtois creeks each receive considerable use by floaters. Seventeen MDC stream access sites are located in the basin. Access to stream frontage is also provided by a mix of MDC conservation areas, MDNR state parks, county parks, and United States Forest Service (USFS) lands.

The public’s understanding of the biological, social, and economic importance of streams in the Meramec Basin may be above average as evidenced by the defeat of the Meramec Dam proposal by referendum in 1978. While landowner participation in Streams for the Future programs has been limited, participation in the STREAM TEAM program has been good. Efforts are underway by several groups in the basin, including STREAM TEAMS, to improve public awareness of the importance of high quality streams.

Objective 4.1: Access sites, bank fishing, and trails will be developed and maintained in sufficient numbers to accommodate public use.

Strategy: Fishing, floating, and other stream-based recreational activities are heavy within the Meramec Basin. Acquisition and development projects along basin streams should be geared to meet the heavy demand.

Acquire and develop public access and frontage sites (for boating and bank fishing) at Wesco in Crawford County, near Highway 30 in Franklin County, and at Route 66 State Park in St. Louis County.

Encourage agencies, municipalities, and county governments to establish and maintain riparian greenways, wetlands, provide stream access, and improve bank fishing and other aquatic wildlife-based recreational opportunities on public lands.

Objective 4.2: Increase the general public's awareness of stream recreational opportunities, local stream resources, and good watershed and stream management practices.

Strategy: The public will be made aware of stream related recreational opportunities and issues through media outlets, fair exhibits, and MDC publications. Increased appreciation of stream resources should follow enhanced public awareness and education. More concern about the quality of water and habitat within the basin's streams should follow, and greater citizen involvement and advocacy in related environmental issues should result. Newspaper articles, presentations, and special events highlighting streams should help foster this awareness.

Use streams for aquatic education programs with schools. Identify stream locations appropriate for educational field trips near participating schools. Water quality and proper land and riparian management should receive topical emphasis in rural areas, whereas water quality advocacy and stream user etiquette should be emphasized in suburban and urban locales.

Participate in special events such as the Water Festival funded by a MDNR grant to the Meramec Regional Planning Commission. The objective of the Water Festival is to teach school children the basics of water quality.

Maintain a stream emphasis in displays at public events, particularly the numerous community and county fairs.

Contribute to an annual fishing prospectus for selected streams and to future revisions of Missouri Ozark Waterways (Hawksley 1997) and other water-oriented publications.

There are over 80 listed STREAM TEAMS within the Meramec River basin. Despite very good coverage of the basin by TEAMS, a few gaps exist. Recruit TEAMS for Dry Fork and Brazil Creek. Promote the formation of STREAM TEAM associations.

Distribute information through organizations such as the Meramec River Recreation Association, STREAM TEAM, canoe outfitters, and angler clubs.

Assist private sector businesses, as appropriate, with developing Meramec River ecotours.

Create a condensed version of this report, and make it available on the Internet

for general distribution.

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